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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,712	11/03/2003	Manoj Som	CDT 1861	3529
1338	7590	03/07/2005	EXAMINER	
KENNETH H. JOHNSON P.O. BOX 630708 HOUSTON, TX 772630000			GRIFFIN, WALTER DEAN	
			ART UNIT	PAPER NUMBER

1764

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/699,712

Applicant(s)

SOM ET AL

Examiner

Walter D. Griffin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/17/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

The disclosure is objected to because of the following informalities: The specification should include a reference to the provisional application.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hearn et al. (US 5,597,476).

The Hearn reference discloses a process for desulfurizing a cracked naphtha such as a light naphtha. The process comprises contacting the naphtha and hydrogen in a first distillation column reactor in which the mercaptans present in the naphtha are reacted with the diolefins to produce sulfides. A lighter boiling fraction is recovered overhead and a higher boiling fraction is recovered as bottoms from the first distillation column reactor. The higher boiling fraction is then fed along with hydrogen to a second distillation column reactor containing a hydrodesulfurization catalyst. The catalyst in this second reactor comprises two metal oxides chosen from molybdenum, cobalt, nickel, and tungsten. The sulfur compounds present in the higher boiling fraction are converted to hydrogen sulfide in this second distillation column reactor. An overhead naphtha product is recovered and hydrogen sulfide is removed from this overhead product. A bottoms fraction is also recovered. A portion of this bottoms fraction may be returned to the second distillation column reactor as shown in the figure and a portion is removed from the process. Both the overhead and bottoms fractions may be used as gasoline blending components. See column 2, lines 30-62; column 4, lines 9-18; and column 6, line 44 through column 7, line 28.

The Hearn reference does not disclose feeding a heavy cracked naphtha along with the higher boiling fraction in any ratio or rate to the second distillation column reactor. The reference also does not disclose combining the first and second overhead fractions, does not disclose further hydrodesulfurizing the first overhead fraction as in claim 4, and does not disclose the

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presence of two catalyst beds in the second distillation column reactor having the claimed compositions.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have added a heavy cracked naphtha at any rate or ratio that is appropriate for the apparatus to the higher boiling fraction and feeding this mixture to the second distillation column reactor because, as stated by Hearn, cracked naphtha contains unwanted sulfur compounds. Therefore, adding a heavy cracked naphtha to the higher boiling fraction of Hearn would necessarily remove unwanted sulfur compounds from both the heavy fraction and the heavy cracked naphtha thereby producing a greater amount of desulfurized product.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have combined the first and second overhead fractions of Hearn because Hearn discloses that both of these fractions can be used as gasoline blending components. Because of their similar utility, one would combine these fractions in order to obtain a greater amount of gasoline blending component.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have further hydrodesulfurized the first overhead fraction of Hearn because, as Hearn discloses, hydrodesulfurization is a common method for removal of sulfur compounds from hydrocarbons. If the sulfur concentration of the first overhead fraction is too high, one would utilize a common desulfurization method such as HDS in order to produce a product with a further reduced sulfur concentration.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hearn by utilizing two catalyst beds in the

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second distillation column reactor because Hearn discloses adding the feed to the second reactor at the middle of one catalyst bed. Having two beds, one above the point of feed entry and one below the point of feed entry, would be equivalent to the disclosed situation of Hearn because, in either case, the feed contacts the catalyst above and below the point of feed entry. Regarding the catalyst composition, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the claimed catalyst in the two catalyst beds because these catalysts utilize mixtures of metals disclosed by Hearn as being effective.

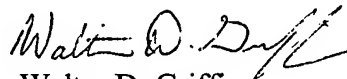
### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is (571) 272-1447. The examiner can normally be reached on Monday-Friday 6:30 to 4:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Walter D. Griffin  
Primary Examiner  
Art Unit 1764

WG

March 4, 2005